

REMARKS

Claims 14-26 are cancelled without prejudice. Claims 1-13 remain pending in the present application. The Examiner rejected claims 1, 4-7, 9, 11 and 13 were rejected, and indicated that claims 2, 3, 8, 10 and 12 would be allowable if rewritten in independent form to include the limitations of the base claim and any intervening claims.

Claim Rejections – 35 U.S.C. §103(a)

The Applicant's representatives thank the Examiner for her time on November 9, 2004 and November 16, 2004 for discussing the claim rejections and the patent to Chow et. al. (Patent No. 5,965,410). Based on these discussions, the content of which are reflected below, it is the understanding of the Applicant's representatives that the application is in condition for allowance. For the reasons set forth below, Applicant traverses the rejections and respectfully submits that the rejected claims and claims that were objected to are in condition for allowance.

The Examiner has rejected Claims 1, 4-7, 9, 11 and 13 under 35 USC §103(a) as being unpatentable over Chow et al. (US 5,965,410 Oct. 12, 1999). The Examiner has objected to claims 2, 3, 8, 10 and 12 as being dependent upon rejected claims, and stated that such objected to claims would be allowable if rewritten in independent form.

In the Final Office Action, the Examiner rejected Applicant's claims, stating that "Chow discloses that the devices may be used in a variety of applications and that they will often include multiple sample introduction ports or reservoirs for the parallel or serial introduction and analysis of multiple samples (Col.8)." The Examiner further asserted that the systems in Chow "selectively provide energy to heat materials." As explained by Examiner, the heating and control operations described in Chow occur "within microfluidic systems." However, as discussed during the aforementioned phone interviews, Chow et al. does not show creation of a condition gradient to affect the rate of binding or reaction between biomolecules and a reactant, and detection of the rate of binding or reaction between the biomolecules and the reactant at discrete locations.

Furthermore, in the Final Office Action, the Examiner stated that Col. 33 of the Chow patent "discloses that thermal control of nucleic acid melting and reannealing is carried out utilizing currents which is viewed to be inclusive of the instant limitation of measuring rate binding or reaction." As discussed during the phone interview, the assay

taught in Chow and relied upon by the examiner appears to be for the purpose of determining only the presence or absence of single or double stranded DNA with dye. While the example disclosed in Chow et al. permits the discrimination of single versus double stranded DNA, the assay in Chow does not disclose detecting the rate of binding or rate of reaction between variants and at least one reactant at discrete locations along a gradient axis. Moreover, the Examiner conceded on Page 3 of the January 21, 2004 Office Action that Chow does not, "explicitly teach detecting rate of binding." Simply observing the labeling of DNA in real time does not render the present invention obvious.

Furthermore, as discussed during the phone interview, Chow et al can not be combined as the Examiner suggested to teach the present invention, as Chow et al teaches away from the present invention by teaching the electrophoretic transport of fluid through microchannels by using temperature gradients. In the present invention, the method is preferably conducted under a fully equilibrated distribution of reactants, such as achieved by simple capillary flow and diffusion. As discussed, the fluid transport taught by Chow et al. would confound the ability to perform the methods claimed, as the creation of condition gradients and measurements of local binding kinetics would be disturbed by such induced flow though a reaction chamber.

Request for Notice of Allowance

Having fully responded to all matters raised in the Final Office Action, the undersigned submits that all claims are in condition for allowance, an indication for which is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 501946 and please credit any excess fees to such deposit account and please reference attorney docket number 64693-015.

Respectfully submitted,
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DRAWINGS

The attached sheet (Sheet 2 of 3) of drawings includes changes to FIG. 2 and replaces the original Sheet 2 of 3. In FIG. 2, previously omitted reference numbers 27, along with their corresponding dashed lines to indicate the reaction axes, have been added.



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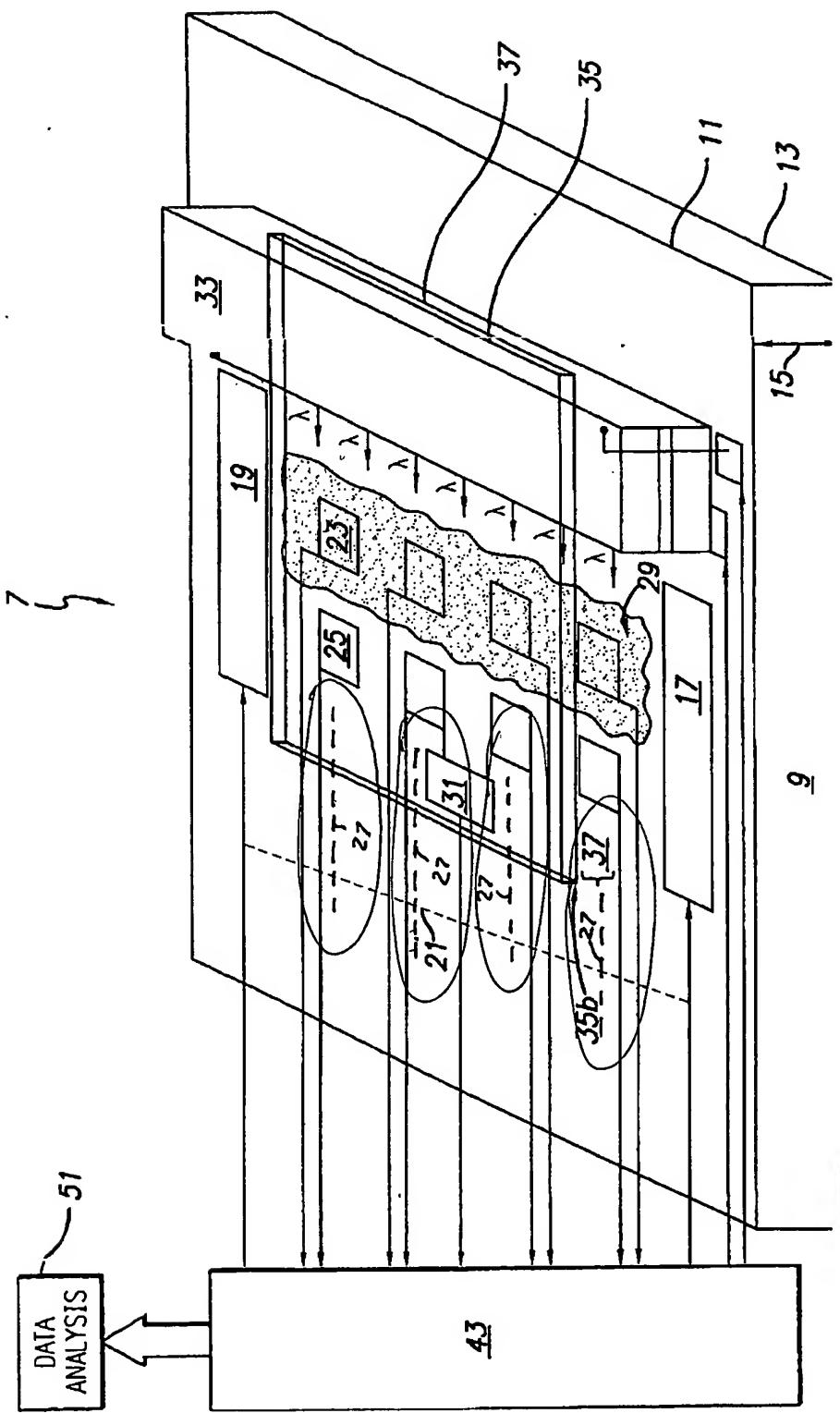


FIG. 2